Online Shopping System (OSS)

Problem Description

Your team has been requested to develop an online shopping system:

A customer can purchase one or more items from the supplier. Customers create their accounts to purchase items in the online shopping system. Customers can request an order using their credit card information stored in the accounts. When the credit card payment is approved, the delivery order is created. The supplier checks the available inventory and processes the delivery order if available. When the delivery order is shipped, the supplier is confirmed. The order status is updated as the supplier processes the order. The detailed requirements are described in the use case model and use case description below.

Your team is required to develop:

Requirements Analysis:

a) Develop the class diagram for the online shopping system, which depicts all classes with stereotypes, which can be an interface, entity, control, or application logic. Define the attributes of each entity class.

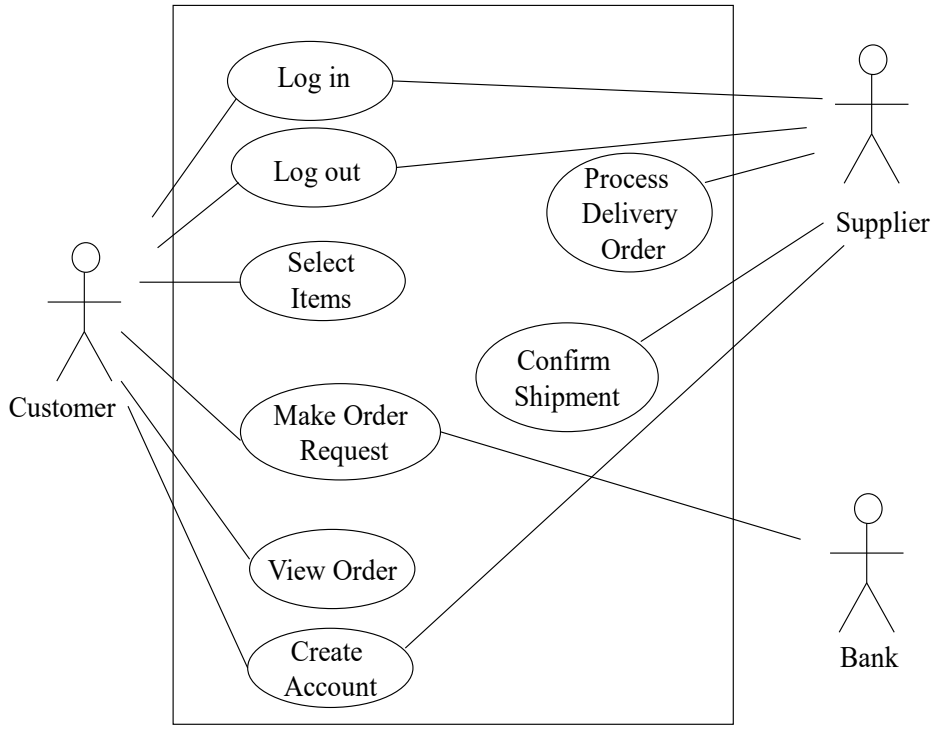
Design:

b) Develop the communication diagram or sequence diagram that depicts objects participating in each use case and the sequence of interactions among the objects. A use case is modeled using a communication diagram or sequence diagram. Need to develop the communication or sequence diagram for main sequence of each use case.

Implementation:

c) Implement the online shopping system in Java. Store customer accounts, delivery order, inventory information, and catalog information in files (or database). ~~Develop a graphical user interface for OSS~~.

Online Shopping System (OSS) - use cases



Use case name: Log in

Summary: Customer logs in system.

Actor: Customer (supplier)

Precondition: none.

Main sequence:

1. Customer enters id and password.

2. System checks if customer id and password are correct.

3. System displays a welcome message if id and password are correct.

Alternative sequence:

Step 3: If customer's ID does not exist in the system, system displays that there is no account.

Postcondition: Customer has logged in system.

Use case name: Log out

Summary: Customer logs out system.

Actor: Customer (or Supplier)

Precondition: Customer logged in system.

Main sequence:

1. Customer selects “log out”.

2. System makes customer log out.

Alternative sequence:

None.

Postcondition: Customer has logged out.

Use case name: Create Account

Summary: Customer creates an account.

Actor: Customer (or Supplier)

Precondition: None

Main sequence:

1. Customer inputs id, password, name, address, phone number and credit card number to the system.

2. System creates a customer account and stores account information.

3. System displays that an account has been created.

Alternative sequence:

Step1: Supplier inputs only id and password to the system.

Step2: If the same id exists in the system, the system displays an error message and requests a different id from the customer.

Postcondition: Customer has created an account.

Use case name: Select Items.

Summary: Customer browses various catalog items from the supplier’s catalog and selects items to purchase.

Actor: Customer

Precondition: none.

Main sequence:

1. Customer requests to browse catalog.

2. System displays catalog information to customer.

3. Customer selects one or more items from catalog.

4. System adds the selected items to a cart.

Alternative sequence:

Step 3: Customer does not select item and exits.

Step 5: Customer does not add the items to a cart and exits.

Postcondition: Customer has browsed items and added them to a cart.

Use case name: Make Order Request

Summary: Customer enters an order request to purchase the selected items. The customer's credit card is checked for validity to pay for the requested items.

Actor: Customer, Bank

Precondition: Customer added items to a cart and logged in customer account.

Main sequence:

1. Customer orders the items with the order details (item names, quantities, total price) in a cart.

2. System retrieves the customer's credit card number from customer account.

3. System requests to a bank checking the customer's credit card for the purchase amount.

4. if approved, system receives a purchase authorization number from bank.

5. System stores a delivery order containing order details, customer Id, purchase authorization number, and order status as "ordered".

6. System confirms approval of purchase and displays order information to customer.

Alternative sequences:

Step 4: If authorization of the customer's credit card is denied (e.g., invalid credit card or over credit limit), the system prompts the customer to enter a different credit card number. The customer can either enter a different credit card number or cancel the order. If customer's new credit card is authorized by bank, the customer's account is updated with the new card number.

Postcondition: Customer has ordered items.

Use Case: View Order

Summary: Customer views the order information.

Actor: Customer

Precondition: Customer has logged in.

Main sequence:

1. Customer selects an order(s).
2. System retrieves the information about the order(s) and status.
3. System displays the information about the order(s) and status.

Alternative sequence: None

Postcondition: Customer has viewed order(s).

Use Case: Process Delivery Order

Summary: Supplier requests a delivery order and determines that the inventory is available to fulfill the order.

Actor: Supplier

Precondition: Supplier has logged in.

Main sequence:

1. Supplier requests delivery orders.
2. System retrieves and displays delivery orders to supplier.
3. Supplier selects a delivery order and requests inventory check on items for the delivery order.
4. System determines that items for the delivery order are available in the inventory.
5. If items are in stock, system reserves the items and changes the order status from “ordered” to “ready”.
6. System displays that items are reserved.

Alternative sequence:

Step 5: If an item(s) is out of stock, system displays that an inventory order is required for the item(s).

Postcondition: System has reserved items for delivery order.

Use Case: Confirm Shipment

Summary: Supplier prepares the shipment manually and then confirms a delivery order.

Actor: Supplier

Precondition: The items for a delivery order are reserved, and supplier logged in.

Main sequence:

1. Supplier prepares the shipment manually and request delivery orders that are “ready” status.
2. System retrieves delivery orders ready and displays them to supplier.

3. Supplier selects a delivery order.
4. System updates inventory with the items for the delivery order.
5. System changes delivery order status from “ready” to “shipped”.
6. System displays confirmation to the supplier.

Alternative sequence: None

Postcondition: Supplier confirmed shipment.